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Increasing medical students' engagement in public health: case studies illustrating the potential role of online learning[1]

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Case studies: e-learning and public health

The Problem

Public health understanding, knowledge and skills are essential to the practice of clinical medicine and to the health of the population. It's place in the curriculum is confirmed by it's inclusion in Tomorrow's Doctor's.[2] Despite this, public health is sometimes treated as an "optional extra" [3], and can be perceived by medical students as irrelevant and unnecessary.[4]

The solution

Three medical schools chose to approach the problem of student engagement using on-line technology. The modules were evaluated using student feedback surveys (CS1&2), site usage monitoring data (CS2&3) and focus groups (CS3). Evaluation focused on three dimensions of engagement: uptake/use, acceptability and perceived effectiveness.

Case Study	Evidence-based medicine and research methods (CS1)	Principles and practice of population screening (CS2)	Global health and communicable disease control pilot (CS3)
Setting	University of Birmingham; year 3; core - 370 students.	UCL Medical School; year 4; core - 400 students	Brighton and Sussex Medical School; year 4; optional – 10 students
e-Learning approach	Live lectures were fully replaced by e-lectures. Students also attended SGTs. Lecturers recorded the e-lectures using PowerPoint and headphones. The lectures were similar in format to the live lectures, with activities adapted from the live lecture.	Live lectures were replaced by a short online module which was supported by SGTs. Module design was informed by Mayer's principles of effective multimedia learning.[5] It comprised short lecture casts, video clips, multiple-choice questions and links to external resources, with short 'diagnostic' quiz for students to self-assess prior knowledge and decide where to focus. Students and trainee doctors created content and tested pilot versions.	The module comprised a 2-week online discussion simulating a 'virtual classroom' focused on realistic scenarios e.g. measuring the impact of HIV in a community. Discussions were asynchronous. Tutors comprised three People's-uni alumni, all health professionals in low-income settings.

Evaluation

Uptake: CS1 – 85% accessed the material; CS2 – 67% (access prompted by an email reminder); CS3 – 80% posted on the discussion forum.

Acceptability: CS1 & 2 – 26-7% increase in satisfaction with online format compared to previous year (live lectures); no significant change in satisfaction with SGTs.
CS3 - students reported they found online discussion 'helpful' and they 'really enjoyed it'. However, some reported feeling 'pressured'.

Perceived effectiveness (based on Chickering and Gamson's Seven Principles of Effective Teaching[6])	
Interaction between students and faculty	There was no suggestion that students in any of the case studies felt 'short changed' by less face-to-face contact with tutors. CS3: students valued the opportunity to interact with healthcare workers overseas.
Interaction and collaboration between students	CS3: some students were intimidated by the requirement to interact with other students in the discussion forum. The asynchronous nature appeared to intensify their need to write more, and more carefully.
Use of active learning techniques	CS1: students paused the video to research their queries online; CS2: the MCQs were the most accessed part of the site (75%) – "really helpful"; CS3: "I think I would have learnt a lot less if it was just a big long passage..in like a paper…"
Emphasis of time on task	All three approaches sought to give students freedom over their learning. CS1: mean of 87 mins spent (range: 10–330 min) watching an 85 min lecture. "I prefer e-lectures, as they allow you to take the lecture at your own pace. You can replay sections, which you didn't quite understand the first time, pause it when you need a break, and skip sections you feel you already know" CS2: median time 37 min (range: <10 min to >3h). While they valued the opportunity "to study at our own pace" they primarily wanted to skip concepts "we have already covered". CS3: several students reported spending much longer on the module than they expected and found it a strain to have constant access: "It was always there, it was something that I could do at any time so I felt guilty if I wasn't looking at it or wasn't working."
Respects diversity—ways of learning	Students in all cases studies valued the flexibility over how and when they learned, and the opportunity to go back to materials.

Conclusion

E-learning can be applied in diverse ways that increase medical student engagement and satisfaction with public health teaching.

Our learning

See handout below for helpful tips.

References

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